AUTHOR INDEX

Abramson, H. A. Electrokinetic Phenomena and Their Application to Biology and Medicine (book review), 420.

Affleck, C. Application of the theory of probability to the size distribution of soil aggregates, 113–119.

Anderson, D. A. *See* **Walker, R. H.,** and Brown, P. E.

Anderson, M. S., and Byers, H. G. Carbon-nitrogen ratio in relation to soil classification, 121–138.

Baver, L. D. *See* **Winterkorn, H.**

Bennett, H. Practical Everyday Chemistry (book review), 423.

Bodenheimer, F. S., and Reich, K. Studies on soil protozoa, 259–265.

Bodman, G. B., and Edlefsen, N. E. Soil-moisture system, 425–444.

Boguslawski, E. von. Eilhard Alfred Mitscherlich—To the sixtieth birthday of the German investigator, 83–85.

Bouyoucos, G. J. Comparison between the pipette method and the hydrometer method for making mechanical analyses of soil, 335–345; method for determining the degree of decomposition that unknown decayed vegetable organic materials have already undergone in nature, 477–482.

Brown, P. E. *See* **Walker, R. H.,** Anderson, D. A., and.

Byers, H. G. *See* **Anderson, M. S.**

Chadwick, L. C. *See* **Laurie, A.**

Collings, G. H. Commercial Fertilizers. Their Sources and Use (book review), 418.

Corbet, A. S. Studies on tropical soil microbiology: II. The bacterial numbers in the soil of the Malay Peninsula, 407–416.

Cunningham, A. Practical Bacteriology (book review), 423.

Dhar, N. R. *See* **Tandon, S. P.**

Dowell, A. A., and Jesness, O. B. American Farmer and the Export Market (book review), 421.

Edlefsen, N. E. New method of measuring the aqueous vapor pressure of soils, 29–35; *see* **Bodman, G. B.**

Emmert, E. M. Rapid method for the determination of total nitrogen in soil, 139–142.

Farris, N. F. Root habits of certain crop plants as observed in the humid soils of New Jersey, 87–111.

Fieger, E. A., and Sturgis, M. B. Profile studies of the Coastal Prairie soils of Louisiana: I. Exchange and solution properties, 267–277.

Fowells, H. A., and Stephenson, R. E. Effect of burring on forest soils, 175–181.

Fred, E. B. *See* **Mehlich, A.,** and Truog, E.

Fresenius, L. *See* **Lemmermann, O.**

Godfrey, G. H. Indicator plants for measuring soil populations of the root-knot nematode, *Heterodera marioni* (Cornu) Goodey, 3–27.

Gopala Rao, G. Newer aspects of nitrification: I., 143–159.

Greaves, J. E. Arsenic content of soils, 355–362.

Heck, A. F. Effect of the degree of base saturation of a soil on its capacity to fix phosphorus in difficultly available form, 463–470.

Henrici, A. T. Biology of Bacteria. An Introduction to General Microbiology (book review), 418.

Jenny, H., and Leonard, C. D. Functional relationships between soil properties and rainfall, 363–381.

Jesness, O. B. *See* **Dowell, A. A.**

Joffe, J. S., and Kardos, L. T. Note on the determination of titanium in soils, 241–243.

Joffe, J. S., and Pugh, A. J. Soil profile studies: VI. Distribution of titanium in soils with special reference to podzols, 245–257.

Kardos, L. T. *See* **Joffe, J. S.**

Kellogg, C. E. Morphology and genesis of the solonetz soils of western North Dakota, 483–501.

Laurie, A., and Chadwick, L. C. Commercial Flower Forcing (book review), 417.

Lemmermann, O., and Fresenius, L. Methoden für die Untersuchung des Bodens (book review), 419.

Leonard, C. D. *See* **Jenny, H.**

McGeorge, W. T. Determination of phosphate availability in calcareous soils by electrodialysis, 347–353.

Mattson, S., and Pugh, A. J. Laws of soil colloidal behavior: XIV. The electrokinetics of hydrous oxides and their ionic exchange, 299–313.

Mehlich, A., Fred, E. B., and Truog, E. Cunninghamella plaque method of measuring available phosphorus in soil, 445–461.

Merkle, F. G. Base exchange studies on the Pennsylvania Jordan field plots, 37–64.

Paulie, E. Microflora of Kazakstan sands (central Asia), 401–406.

Pugh, A. J. Laws of soil colloidal behavior: II. Ionic exchange with hydroxides, 161–173; III. Colloidal phosphates, 315–334; *see* **Joffe, J. S.**; **Mattson, S.**

Ravikovitch, S. Anion exchange: I. Adsorption of the phosphoric acid ions by soils, 219–239; II. Liberation of the phosphoric acid ions adsorbed by soils, 279–290.

Reich, K. *See* **Bodenheimer, F. S.**

Scholz, H. F. *See* **Wilde, S. A.**

Shoemaker, J. S. Small-Fruit Culture (book review), 417.

Snider, H. J. Solubility of phosphorus in soils from some Illinois experiment fields, 471–476.

Spencer, V. E., and Stewart, R. Phosphate studies: I. Soil penetration of some organic and inorganic phosphates, 65–79.

Stephenson, R. E. *See* **Fowells, H. A.**

Stewart, R. *See* **Spencer, V. E.**

Sturgis, M. B. *See* **Fieger, E. A.**

Tandon, S. P., and Dhar, N. R. Influence of temperature on bacterial nitrification in tropical countries, 183–189.

Truog, E. *See* **Mehlich, A.**, Fred, E. B., and.

Vandecaveye, S. C., and Villanueva, B. R. Microbial activities in soil: I. Nitrogen fixation by Azotobacter and activity of various groups of microbes in Palouse silt loam, 191–205.

Villanueva, B. R. *See* **Vandecaveye, S. C.**

Walker, R. H., Anderson, D. A., and Brown, P. E. Physiological studies of Rhizobium: II. The effect of nitrogen source on oxygen consumption by *Rh. meliloti*, *Rh. trifolii*, and *Rh. phaseoli*, 207–217.

Wilde, S. A., and Scholz, H. F. Subdivision of the Upper Peninsula experimental forest on the basis of soils and vegetation, 383–399.

Willcox, O. W. Reshaping Agriculture (book review), 422.

Winterkorn, H., and Baver, L. D. Sorption of liquids by soil colloids: I. Liquid intake and swelling by soil colloidal materials, 291–298.

Wright, C. H. Soil Analysis. A Handbook of Physical and Chemical Methods (book review), 421.

SUBJECT INDEX

Adsorption—
  anion, 163, 308.
  cation, 304.
  solubility and, 166.
Agriculture, Reshaping (book review), 422.
Alkaline, physiologically, salts, effect on phosphate liberation, 289.
American Farmer and the Export Market (book review), 421.
Ammonia—
  exchangeable, 42–56.
  oxidation of—
    as affected by catalysts, 147.
    photochemically, 144.
Anion—
  adsorption, 308.
  exchange in soils, 219–239, 279–290.
Arsenic content of soils, 355.
Azotobacter, nitrogen fixation by, 191.
Bacteria—*see* also Microbes.
  Biology of (book review), 418.
  numbers in tropical soil, 407.
  Rhizobium, oxygen consumption by, 207.
Bacteriology, Practical (book review), 423.
Base—
  exchange—*see* also Cation
    of hydroxides, 172.
    properties of coastal prairie soils, 267.
    studies on the Pennsylvania field plots, 37–64.
  exchange, as affected by—
    ammonium sulfate, 51.
    dried blood, 49.
    lime, 44, 54.
    manure, 43.
    nitrate of soda, 50.
    nitrogen carriers, 56.
    potash, 46, 54.
    salt water, 274.
    superphosphate, 46, 47.
  saturation—
    effect on phosphorus fixation, 463.
    method of determining, 38.
  saturation, as affected by—
    ammonium sulfate, 51.
    cropping, 42.
    dried blood, 49.
    lime, 44, 54.
    manure, 43.
    nitrate of soda, 50.
    nitrogen carriers, 56.
    potash, 46, 54.
    superphosphate, 46, 47.
  saturation, relation to—
    hydrogen-ion concentration, 464.
    rainfall, 375.
Bases—
  exchangeable—
    effect of treatments on, 37.
    in virgin and irrigated mounds, 273.
    method of determining, 40.
  nitrification effects on solubility of, 178.
Braunerde, titanium in, 255.
Calcium—*see* also Lime.
  exchangeable, 42–56.
  exchangeable, relation to phosphorus fixation, 465.
  glucose phosphate, penetration of, into the soil, 76.
  glycerophosphate, penetration of, into the soil, 76.
  glycol phosphate, penetration of, into the soil, 76.
  hydroxide, effect on phosphate release from soils, 280.
  saturated soil, phosphorus pentoxide absorption by, 225.
  sorbityl phosphate, penetration of, into the soil, 76.
Capillarity, *see* Moisture, capillary.
Carbon-nitrogen ratio in major soil groups of the U. S. A., 121–138.
Cation—
  adsorption, 304.
  exchange as affected by—
    calcium hydroxide, 280.
    sodium hydroxide, 285.
Chemistry, Practical Everyday (book review), 423.
Chernozem—
  carbon in profile of, 124.

Chernozem—(*continued*)
carbon-nitrogen ratio—
colloids of, 125.
soils, 124.
nitrogen in profile of, 124.
Climate, location of boundary between arid and humid, 379.
Clover, red, root development of, in humid soils, 99.
Colloids—
inorganic, amount of, as affected by rainfall, 371.
isoelectric point and ion exchange in, 162.
laws governing behavior of soil, 161, 299.
silica-sesquioxide ratio of, as a function of water intake, 296.
soil, sorption of liquids by, 291–298.
Corn, root development of, as affected by soil conditions, 103.
Cunninghamella plaque method for available phosphorus in soil, 445–461.
Daikuhara, Gintaro, obituary note on, 1.
Electrodialysis, phosphate availability as determined by the method of, 347–353.
Electrokinetic Phenomena and their Application to Biology and Medicine (book review), 420.
Fertilizers, Commercial (book review), 418.
Flower Forcing (book review), 417.
Forests, subdivision of, on basis of soils and vegetation, 383–399.
Fruit, Small-, Culture (book review), 417.
Humus, in burnt forest soils, 180.
Hydrogen—
exchangeable, 42–56.
exchangeable, relation to rainfall, 373.
saturated soils, adsorption of phosphorus pentoxide by, 220.
Hydrogen-ion concentration—
effect on—
microbial activity in soils, 201.
phosphoric acid adsorption by the soil complex, 230.
relation to—
ammonium sulfate, 51.
cropping, 42.
degree of saturation, 56.
dried blood, 49.
isoelectric precipitation of hydroxides, 301.
lime, 44, 54.
manure, 43.
nitrate of soda, 50.
nitrogen carriers, 56.
potash, 46, 54.
rainfall, 373.
superphosphate, 46, 47.
Hydroxides—
electrokinetics of, 299.
ionic exchange with, 161, 299.
Isoelectric—
point of a series of hydroxides, 300.
precipitation in the titanium-hydroxide system, 250.
Laterite soils, 132.
Lateritic soils—
carbon in profile of, 131.
carbon-nitrogen ratio in, 131.
genetic relation of, to podzolic soils, 250.
nitrogen in profile of, 131.
Lime, effect on—
liberation of phosphate, 289
nitrogen fixation, 194.
Magnesium, exchangeable, 42–56.
Manure, effect on nitrogen fixation, 194.
Microbes—*see* also Bacteria.
groups of, activity in soil, 191.
in Kazakstan sands, 401.
reaction effects on soil, 201.
Mitscherlich, E. A., to his sixtieth birthday, 83.
Mitscherlich method for phosphorus availability as compared with other methods, 457.
Moisture—
capillary potential of, relation to vapor pressure, 435.
mechanical forces, action on soil, 429.
movement in soil, 438.
soil system, 425.
Nematodes, root-knot in soils, 3.
Nitrates—
distribution of, at different depths, 154.
non-biological, formation of, 158.
Nitrification—
bacterial—
in tropics, 183–189.
versus chemical, 151.
calcium versus magnesium carbonate, effect on, 186.
chemical, 144, 187.
newer aspects of, 143–159.
studies in forest soils, 176.
Nitrite—
formation of, photochemically, 148.
oxidation of, to nitrates, 158.
Nitrogen—
fixation in soils, 191.

in—
chernozem, 124.
lateritic soils, 131.
podzolic soils, 129.
podzols, 128.
prairie soils, 126.
method of determining, in soils, 139–142.
nitric—
relation to radiant energy of sun, 156.
seasonal variation of, in atmosphere, 155.
organic and inorganic, photochemical oxidation, 152.
rainfall function relationships, 368.
Organic matter, degree of decomposition, method of determining, 477–482.
Phosphates—
availability of, 66.
availability of, as determined by electrodialysis, 347.
colloidal, study of, 315.
effect on base exchange, 46.
root zone distribution of, 69.
soil penetration of organic and inorganic, 65–79.
structure of, 316.
Phosphoric acid—
adsorption by soils, 219.
liberation of adsorbed, in soils, 279.
Phosphorus—
available, in soil, 445.
fixation of, 463.
solubility of, in soils, 471–476.
Plants, indicator for measuring population of nematodes in soils, 3.
Podzol—
analyses of, soils, 254.
carbon content of the, profile, 128.
carbon-nitrogen ratio of, 128.
nitrogen content of the, profile, 128.
soils, 387.
swampy, soils, 388.
titanium content of the, profile, 245.
Podzolic soils—
gray-brown—
carbon in profile of, 129–130.
carbon-nitrogen ratio, 129–130.
nitrogen in profile of, 129–130.
yellow and red—
carbon in profile of, 129–130.
carbon-nitrogen ratio, 129–130.
nitrogen in profile of, 129–130.
titanium in, 255.
Potassium, exchangeable, 42–56.
Potatoes—
root development of, in humid soils, 89.
yield of, as affected by spacing and seed piece, 98.
Prairie—
carbon-nitrogen ratio of, soils, 126.
coastal, soils, profile studies, 267–277.
Protozoa, soil, studies on, 259–265.
Rainfall, relation to soil properties, 363–381.
Red soils, titanium in, 255.
Rhizobium, *see* Bacteria.
Root—
clover (red), as affected by soil conditions, 99.
corn, as affected by soil conditions, 103.
habits of certain crop plants in soils of New Jersey, 87–111.
potato, as affected by—
fertilizers, 93.
seed piece, 94.
zone, distribution of nutrients within the, 69.
Silica-sesquioxide ratio, water intake as a function of, 296.
Sodium—
exchangeable, 42–56.
hydroxide, effect on exchangeable cations and anions, 285.
Soil—
acidity, relation to rainfall, 373.
aggregates, size distribution of, 113–119.
Analysis (book review), 421.
calcium saturated soil, 225.
classification, relation to carbon : nitrogen ratio, 121–138.
colloidal behavior, laws of, 161, 299, 315.
colloids, *see* Colloids.
formation, intensity of, 377.
hydrogen saturated, 221.
mechanical analysis of, comparison of methods, 335–345.
Methods of Investigation (book review), 419.
microbial activities in, 191–205.
moisture, *see* Moisture.
moisture system, 425–444.
Pennsylvania, fertility plots, studies on, 37.
phosphates—*see* also Phosphates, Phosphorus.
organic and inorganic, penetration of, 65.
release of adsorbed, 279.

Soil—(*continued*)
plots, Pennsylvania fertility, 37–64.
profile—
chernozem, 124.
lateritic, 131.
podzol, 128.
podzolic, 129.
prairie, 126, 267.
studies, 245–257, 267.
properties, relation to rainfall, 363.
protozoa, 259; *see* also Protozoa.
reaction, effect on microbial activity, 201.
root-knot nematode population in the, 3–27.
solonetz, *see* Solonetz.
sterilized, effect on ammonia oxidation, 152.
tropical, microbiology of, 407–416.
water table, disappearance of, 437.
Soils—
anion exchange in, 219.
arsenic content of, 355–362.
base saturation in, 38, 220.
Braunerde, *see* Braunerde.
calcareous, phosphate availability, 347.
chernozem, *see* Chernozem.
forest—
effect of burning on, 175–181.
management and, 391.
subdivision on basis of, 383.
gray-brown podzolic, *see* Podzolic soils.
humid, of New Jersey, root penetration as observed in, 87.
hydrogen-ion concentration, *see* Hydrogen-ion concentration.
hydrogen saturated, 221.
laterite, *see* Laterite.
lateritic, *see* Lateritic.
manured, effect on nitrogen fixation, 194.
muck, 389.
nitrogen in, *see* Nitrogen.
Palouse silt loam, microbial activities in, 191.
phosphoric acid liberation in, 279.
podzol, 387; *see* also Podzol, Podzolic soils.
prairie, *see* Prairie.
red and yellow podzolic, *see* Podzolic soils.
sandy, of Kazakstan, flora of, 401–406.
titanium determination in, 241.
unsaturated, 221.
vapor pressure of, method of measuring, 29–35.
yellow and red, titanium in, 255.
Solonchak, profile study of, 489.
Solonetz—
morphology and genesis of, 483–501.
solonchak stage leading to, 489.
Titanium—
determination of, in soils, 241–243.
distribution of—
in colloid fraction of various soils, 255.
in soils, 245.
effect on oxidation of ammonia, 148.
Unsaturation, effect on phosphate adsorption by the soil complex, 230.
Urea, oxidation of, photochemically, 152.
Vapor pressure—
curves of sand and clay, 427.
of soils, 29.
Vegetation—
as basis for subdividing forests, 383.
importance of, in saline soils, 497.
Water table, *see* Soil water table.
Yellow soils, titanium in, 255.